



International Civil Aviation Organization

The Eleventh Meeting of the FANS Implementation Team for South-East Asia (FIT-SEA/11) and the Eighteenth Meeting of the South-East Asia ATS Coordination Group (SEACG/18)

Bangkok, Thailand, 3 – 6 May 2011

Agenda Item 5: Review Current Operations across Southeast Asia and Identify Problem Areas

HARMONISATION OF ATC PROCEDURES FOR ADS-B OPERATIONS IN THE SOUTH CHINA SEA AREA

(Presented by Singapore)

SUMMARY

The implementation of ADS-B over the South China Sea will bring about enhancement to safety and operational efficiency for flights operating in the South China Sea area.

This paper proposes to discuss the harmonization of ATC procedures for ADS-B operations during the operational trials and implementation on ATS routes L642 and M771 in order to reap the full benefits that come with the deployment of ADS-B.

Action by the meeting is at Paragraph 3.

1. Introduction

1.1 At the SEACG/17 Meeting in Singapore May 2010 in Singapore, the meeting noted the outcomes from the SEA ADS-B WG/5 meeting which highlighted the plan to implement ADS-B surveillance for ATS routes L642 and M771 over the South China Sea area. ATS routes L642 and M771 are two of the busier routes over the South China Sea area that serves flights operating between the airports in the South East Asia region and the Pearl River Delta area and beyond.

1.2 At the ADS-B SITF/8 Meeting in May 2009 in Hanoi, CANSO presented the cost benefit analysis study which showed potential fuel savings of 1.2 million kilograms and reduction of carbon emission by 4 million kilograms a year through the reduction of flight delay and allocation of optimum flight levels.

1.3 At the SEA ADS-B WG/6 Meeting in February 2011 in Singapore, Hong Kong, China highlighted the need to strengthen collaboration and to harmonise the implementation of seamless surveillance coverage on ATS routes L642 and M771.

2. Discussion

2.1 The introduction of ADS-B will provide an increase in capacity to meet the growing air traffic demand in this region. ADS-B surveillance, with the associated VHF radio coverage, will allow air traffic controllers to apply minimum separation equivalent to that of radar separation. While the minimum separation stipulated by ICAO for ADS-B surveillance services is 5 NM, it may not be operationally viable to provide flights with the minimum longitudinal spacing throughout the entire cruising segment of the flight on these routes. However, the States involved could explore the appropriate longitudinal spacing reduction on ATS route L642 and M771 that would quantify the benefit of ADS-B implementation.

2.2 In July 2008, under the auspice of the ICAO RNP-SEA Task Force, the States involved implemented the reduction of horizontal separation on ATS routes L642 and M771 based on the PBN RNP10 specification. This allowed the longitudinal separation to be reduced to 50 NM between flights that are ADS-C and CPDLC equipped. For flights that are not ADS-C and CPDLC equipped, the conventional 10 minutes longitudinal separation based on Mach Number Technique applies.

2.3 There is also a potential to reduce the longitudinal separation further down to 30 NM based on RNP4 PBN specification. However, the potential of implementing RNP4 PBN specification would be limited by the level of equipage of flights operating on these routes and also reliant on the respective States' PBN implementation plans and implementation timeline for RNP4.

2.4 With the implementation of ADS-B in Singapore FIR that covers ATS routes L642 and M771, there would be seamless surveillance coverage from end-to-end on these routes. This presents another opportunity for the States involved to enhance the operational efficiency on these routes. As such, the States could discuss on the appropriate reduction of longitudinal spacing for ADS-B equipped flights on these routes.

2.5 With the introduction of a major air traffic management initiative, an operational trial would be carried out to ensure that both the air traffic controllers and pilots would be familiar with the new operating procedures. Such an operational trial will also ensure that any difficulties encountered during the trials will be appropriately addressed to ensure that safety will not be compromised and the operational efficiency will not be significantly affected.

2.6 In this respect, Singapore proposes a phased approach to achieving seamless surveillance coverage on L642 and M771 through the deployment of ADS-B. In Phase I of the operational trials, ADS-B surveillance separation would be applied to suitably ADS-B equipped aircraft at or above FL350 on opportunity basis. This trial period would run for one year which will provide ample time for operators to progressively upgrade their on-board equipage to reap the benefits of ADS-B surveillance.

2.7 In Phase II of the operational trial, suitably ADS-B equipped aircraft operating on L642 and M771 will be provided with priority on the assignment of FL350 and/or above to achieve their optimum level. This phase would also run for one year period before the full implementation of an exclusive ADS-B airspace at or above FL290 on these two routes. The timeline for the various phases can be found in **Annex A**.

2.8 The phased approach would also allow the other States to work towards a suitable longitudinal spacing between ADS-B equipped flights. Progressively, the potential of reducing the longitudinal spacing on these two routes further to meet the growing traffic demand would ensure that flights would continue to operate efficiently.

3. Action by the Meeting

3.1 The meeting is invited to:

- (a) note progress of reducing longitudinal separation on ATS Route L642 and M771 since July 2008;
- (b) note the proposed height band of FL350 and above for the application of ADS-B separation on opportunity basis for Phase I and on priority basis for Phase II of the operational trial; and
- (c) discuss on the proposed reduction in longitudinal spacing between suitably ADS-B aircraft to quantify the benefits of implementing ADS-B.

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ADS-B Operational Trial and Implementation in Singapore FIR

